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MYSTERIOUS BARN FIRES

A radio talk by David J. Price, Bureau of Chemistry and Soils, delivered through WRC and 17 other stations associated with the National Broadcasting Company, at 1:30 p. m., Eastern Standard Time, Monday, May 27, 1929.

The world of science has its mysteries just like the world of politics or of business. One of them is that water, usually the enemy of fire, sometimes causes fires.

A good many of you know that this is more than a scientific mystery. It is a practical problem. You know that wet hay, cattle feed, and similar farm products can develop sufficient heat to burn without benefit of matches. You know, too, from bitter experience, that green hay or improperly cured hay stored away in a barn can go up in flames started by this uncanny process known as "spontaneous combustion."

Your neighborhood is an exception if it hasn't been visited by a "mysterious barn fire." Our most reliable estimates place the loss annually to farmers from such fires at \$30,000,000. That is one-fifth of the \$150,000,000 total annual fire damage to farm property. Of course, we can't say how many of the 3,500 lives of people on farms and in rural communities snuffed out each year by fires may be lost in blazes caused by spontaneous combustion.

Our neighbors in Canada experience losses like ours from "mysterious barn fires!" At least 90 such fires in the Province of Ontario in one season were charged to spontaneous heating. For the most part they followed the harvesting and threshing seasons.

Two years ago the Department of Agriculture began a study of such fires to find out just how they originate. Strangely enough, floods gave us the most help in the first year of this study. You remember the heavy floods in Kansas in 1928 and Vermont in 1927? They gave us a number of cases of spontaneous combustion in hay to study close-up.

In northern Vermont the flood waters that fall reached the hay mows of hundreds of barns. Some of our specialists were on the ground. They noticed that excessive heating of the hay set in almost at once after the flood waters receded. In many cases this heating endangered the houses well as the barns and other farm buildings.

In every pile of wet hay some heating was found to have taken place. Often the heating was dangerous, and many fires broke out. A clear-cut case of spontaneous ignition -- we prefer to call it that instead of spontaneous combustion -- occurred near Middlesex, Vermont. The barn was stored with about 50 tons of meadow hay and alfalfa. It stood on a farm in a narrow part of the Winooski River valley. There the flood rose very high. Its crest came to a point 17 feet from the base of a 45-foot haystack on the farm, and of course the water invaded this hay barn.

Before the flood, the farmer had noticed no heating of the hay. But within 24 hours after the water began to go down, the hay was steaming away at a great rate. And within another 24 hours the barn burned, even though the water was still about four feet deep about it. Friday morning saw the crest of the flood. It began to go down that afternoon. By Saturday morning the hay was steaming. On Sunday morning the hay evidently was very hot, and on Monday morning a distinctly charred odor hung on the air. Late Monday afternoon the barn and hay broke out into flames and burned. A nearby silo also fell over and was destroyed.

This was a typical case. Heat generated in the wet bottom layers of the stored hay. The heat escaped up through the hay and produced drafts of hot gases -- we call them "flues" -- which rose to the surface thoroughly heating the hay until it got to the blazing point.

Our studies in Vermont and since then in other places have raised a lot of questions. Now we're going after the answers to those questions. Here are some of the most important ones:

Are the present hay crops, principally alfalfa and clover more difficult to cure properly than crops chiefly of timothy hay?

Should stands of hay grasses wet from rain be mowed before they are completely and thoroughly dry?

What is the effect of a leaky roof upon hay placed in the mow?

Has the old-time custom of salting been largely given up? Formerly most people thought that salting retarded heating of green or wet hay.

What is the effect of placing new hay on top of hay from the previous year's crop? It is claimed that this increases the danger of heating.

What effect do new types of haying machinery have upon spontaneous heating?

Now I hope that none of you may have fires caused by spontaneous ignition. But if you do, you can help this work to prevent such fires, by sending us a detailed account of the circumstances.

In the Department we are starting experiments as well as studying actual farm fires. We are putting up a barn on the Animal Husbandry farm at Beltsville, Maryland. In this barn we will reproduce the conditions under which spontaneous heating can occur, so we can determine the factors that lead up to the point of fire.

We will study the feeding value of hay during heating, and also of salt-treated hay. This experimental barn will be in operation throughout the present season and should afford an excellent opportunity for an investigation of this important question.

We in the Department of Agriculture earnestly hope to be able to aid in controlling those so-called "mysterious barn fires," and, as I have said, ask you to help in the study by reporting the circumstances of such fires in your neighborhood.

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MR. SALISBURY: Where should those reports be sent, Mr. Price?

MR. PRICE: Send them to the Department of Agriculture and they will reach us all right.

